ACRYLIC COPOLYMER FAST DRY TRAFFIC MARKING PAINT MSP-98-08G

**1.0 Description.** These specifications cover white and yellow acrylic copolymer fast dry traffic paint for application on clean, dry bituminous or Portland cement concrete pavements. The paint is suitable for application at material temperatures less than 125 F (52 C) and in cool ambient temperatures, as well as normal summertime temperature conditions. The paint shall be capable of receiving and holding glass beads for producing reflectorized traffic markings.

**2.0 Materials.** The paint shall not contain more than 3200 ppm lead and/or more than 800 ppm chromium based on dry weight and shall have limited volatile organic compound (VOC) content, as noted herein.

**2.1 General.** The finished paint shall be formulated and manufactured from first-grade materials and shall be a fast drying, solvent based, acrylic copolymer resin type paint capable of withstanding air and roadway temperatures without bleeding, staining, discoloring, or deforming. The dried paint film shall be capable of maintaining its original dimensions and placement without chipping, spalling, or cracking. In addition, it shall not deteriorate because of contact with normal roadway chemicals.

**2.2 Durability Testing.** Determination of conformance to this specification will include, but will not be limited to, the evaluation of test data from AASHTO's National Transportation Product Evaluation Program (NTPEP) or other MoDOT approved facilities. The maintained retroreflectivity and durability shall conform to the following requirements after being installed on at least one NTPEP test deck in a northern, wet climate region for at minimum of six months, including the winter months of December, January, and February.

**2.2.1 Maintained retroreflectivity.** Photometric quantity to be measured will be the coefficient of retroreflective luminance ($R_L$) in accordance with the requirements of ASTM E1743 for 15-meter geometry and ASTM E1710 for 30-meter geometry. The average $R_L$ for concrete and asphalt surfaces shall be expressed in millicandelas per square foot per foot-candle and shall be at least 100 for 15 meter or 75 for 30 meter, when measured in the wheel path area.

**2.2.2 Durability.** Paint shall have a durability rating of at least 4 for both concrete and asphalt surfaces when tested in the wheel path area of the NTPEP test deck.

**2.3 Mixed Paint.**

**2.3.1** The paint shall be strained before filling, using a screen or a sieving device no coarser than 40 mesh.

**2.3.2** Volatile organic Compound content (VOC) of the finished paint shall be less than 1.25 pounds of volatile organic matter per gallon (150g/L) of total non-volatile paint material when tested in accordance with ASTM D 3960.

**2.3.3** The paint shall have the following physical properties:

| | |
|---|---|
| Viscosity, KU | 80 - 95 |
| Laboratory Dry Time, ASTM D 711, minutes, max. | 10 |

**2.3.3.1** For white, the color shall closely match Color Chip 37925 of Federal Standard 595b and for yellow, the color shall closely match Color Chip 33538 of Federal Standard 595b.

Color determination will be made for markings and the diffuse daytime color of the markings shall conform to the below CIE Chromaticity coordinate limits. Color determination for liquid

marking materials will be made over the black portion of a 2A or 5C Leneta Chart (or equal) at least 24 hours after application of a 15-mil wet film. Color readings will be determined in accordance with the requirements of ASTM E1349 using CIE 1931 2º standard observer and CIE standard illuminant D65.

| CIE CHROMATICITY COORDINATE LIMITS (INITIAL) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| Color | x | y | x | y | x | y | x | y |
| White | 0.334 | 0.357 | 0.334 | 0.317 | 0.297 | 0.357 | 0.297 | 0.317 |
| Yellow | 0.531 | 0.483 | 0.531 | 0.429 | 0.471 | 0.483 | 0.471 | 0.429 |

**2.3.3.2** The minimum contrast ratio shall be 0.98 when drawn down as a 15 mil wet film on a 2A or 5C Leneta Chart, or equal, and air dried 24 hours. Contrast ratio = Black/White.

**2.3.3.3** The daylight directional reflectance of a 15 mil wet film applied to a 2A or 5C Leneta Chart (or equal) and dried for a minimum of 24 hours shall not be less than 84 percent for the white paint and not less than 50 percent for the yellow paint.

**2.4 Glass Beads.** Type I moisture resistant beads shall be used at a minimum rate of 8 pounds per gallon of paint, unless otherwise specified.

**3.0 Acceptance.**

**3.1** Except as noted, each batch or lot of paint shall be sampled and approved by the engineer prior to use.

**3.2** No paint shall be used that is more than 15 months old.

**3.3** The paint manufacturer shall supply certification that the paint supplied meets the requirements of this specification. The certification shall include reference to the specific NTPEP test deck to which the paint was applied, including NTPEP identification numbers and report numbers.